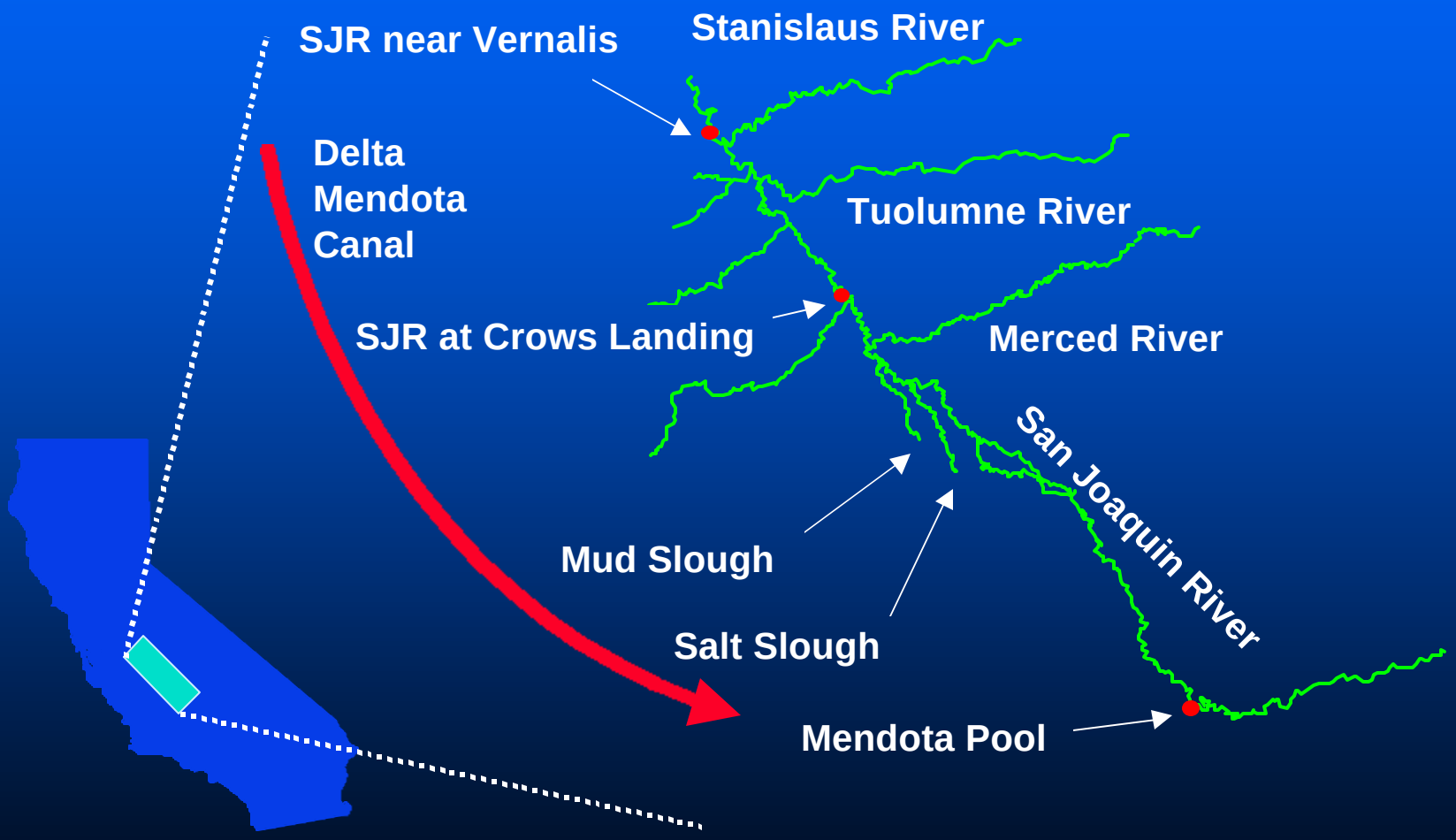
San Joaquin River Basin Plan Amendment Addressing Salinity and Boron

Background on San Joaquin River Water Quality

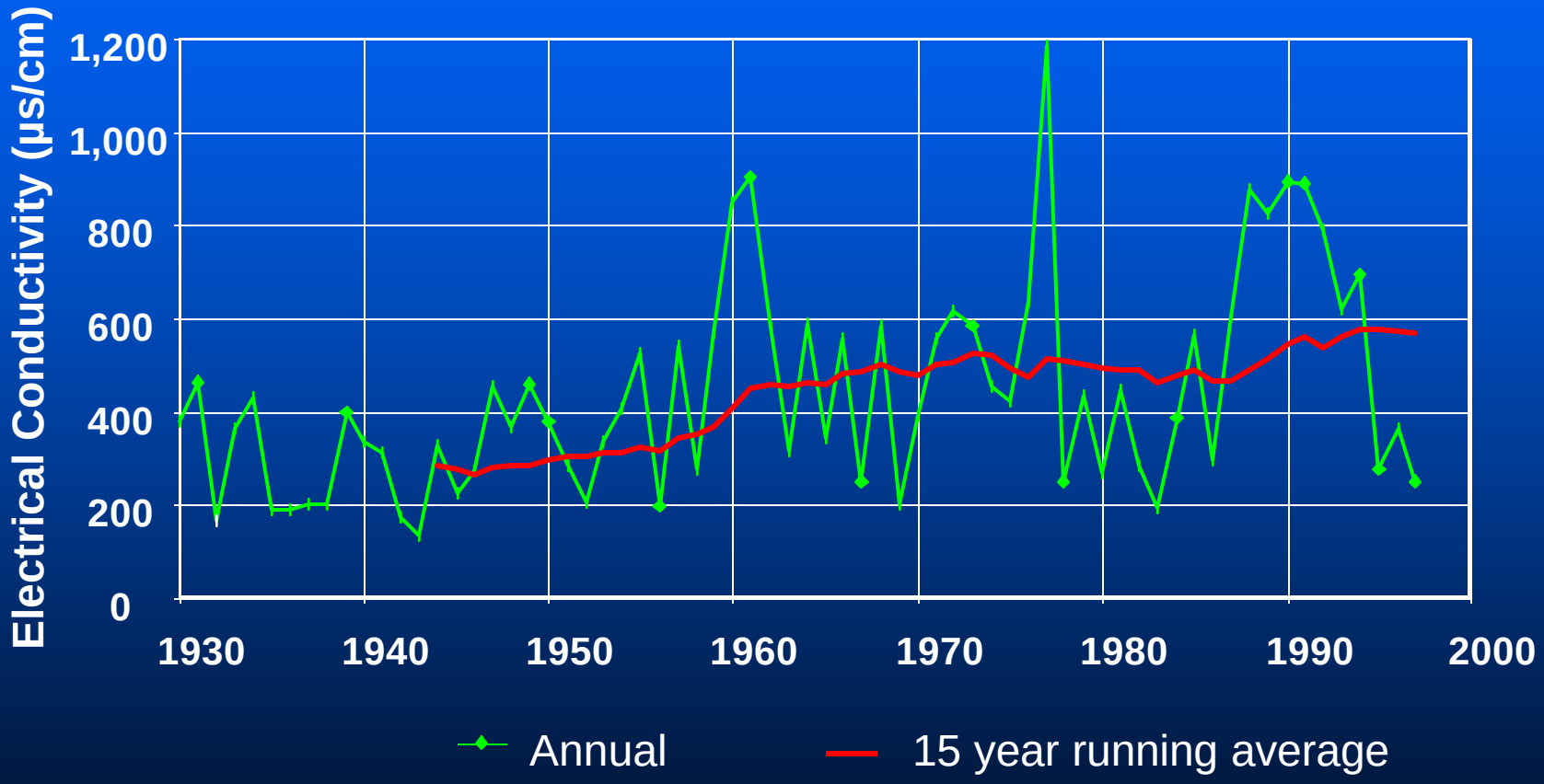
Technical Background

- Area of Concern
- Current Water Quality Objectives
- Past and Current Water Quality Conditions
- Changing Conditions
- Questions, Discussion, and Comments

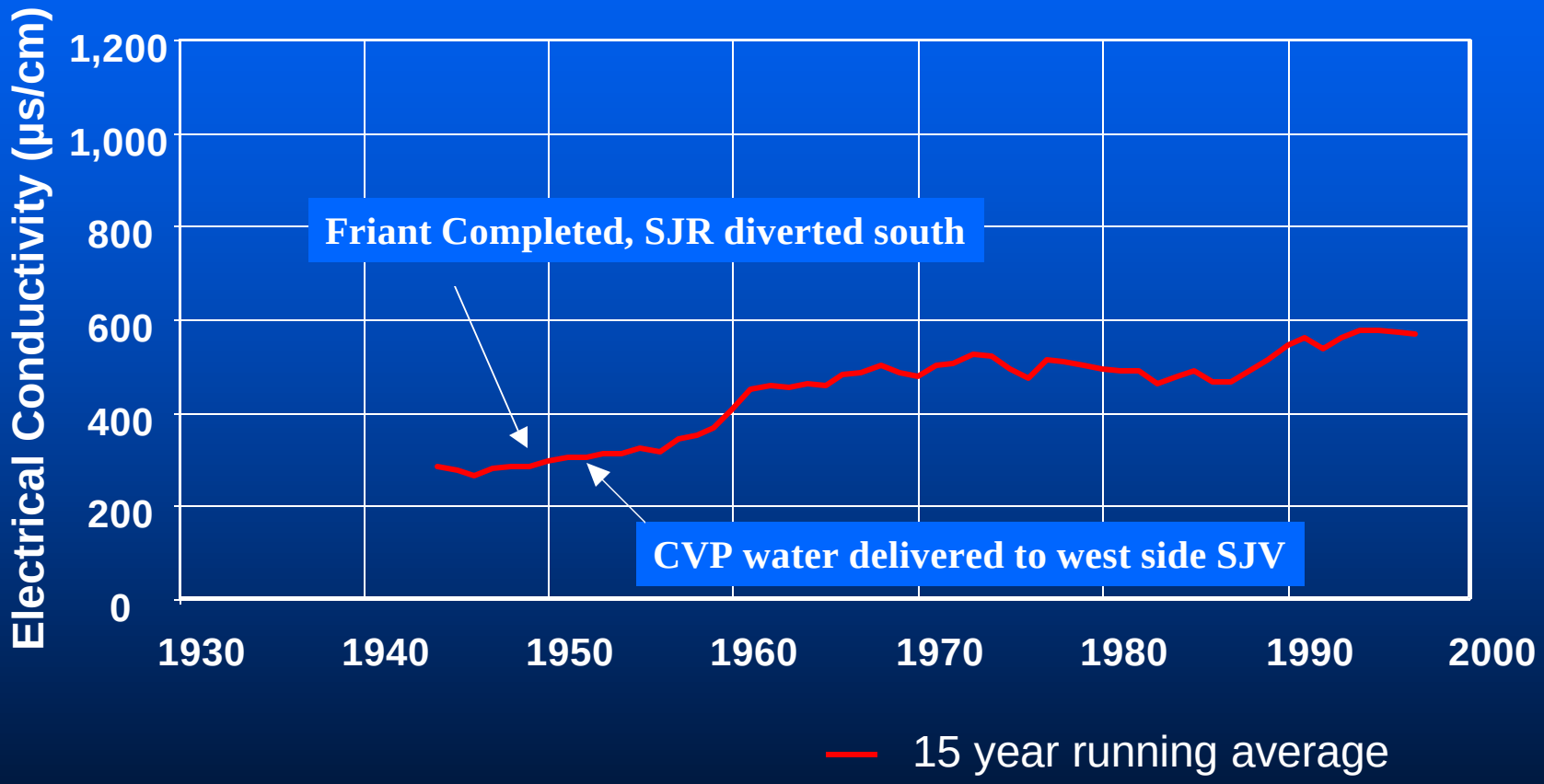
Lower San Joaquin River Basin



SJR Near Vernalis Mean Annual Electrical Conductivity



SJR Near Vernalis Mean Annual Electrical Conductivity



Current Salinity Water Quality Objectives

In 1991, the SWRCB adopted the following water quality objective for electrical conductivity (EC) in the Bay-Delta Plan for the San Joaquin River at Airport Way Bridge near Vernalis:

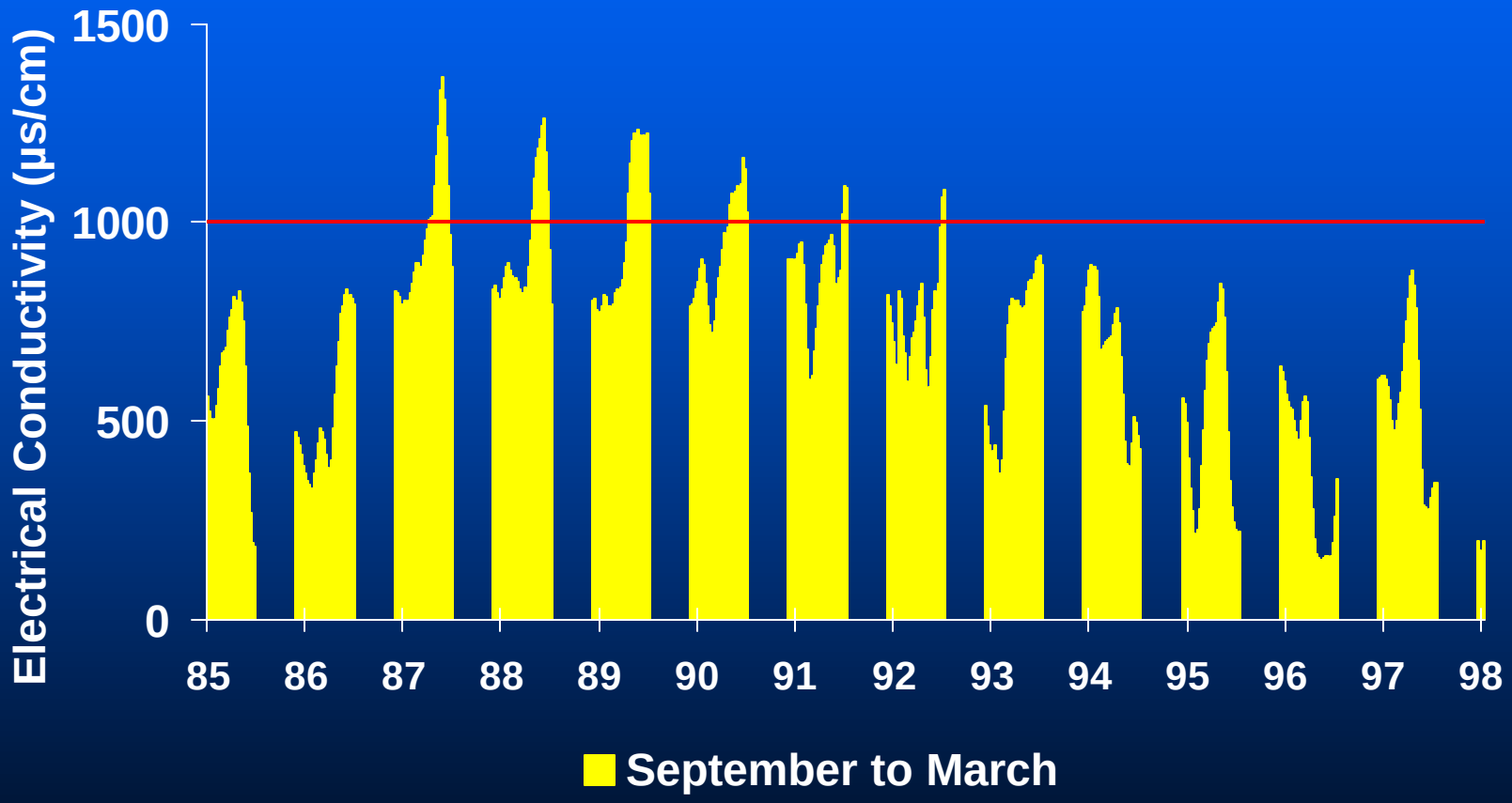
Objective (µs/cm)	Time Period
700	April through August
1,000	September through March

Current Boron Water Quality Objectives

Location Season	Mean Monthly Objective (mg/L)
Sack Dam to Merced River:	
15 March to 15 September	2.0 (or 5.8 maximum)
Merced River to Vernalis	
15 March to 15 September	0.8 (or 2.0 maximum)
16 September to 14 March	1.0 (or 2.6 maximum)
critical year / year round	1.3

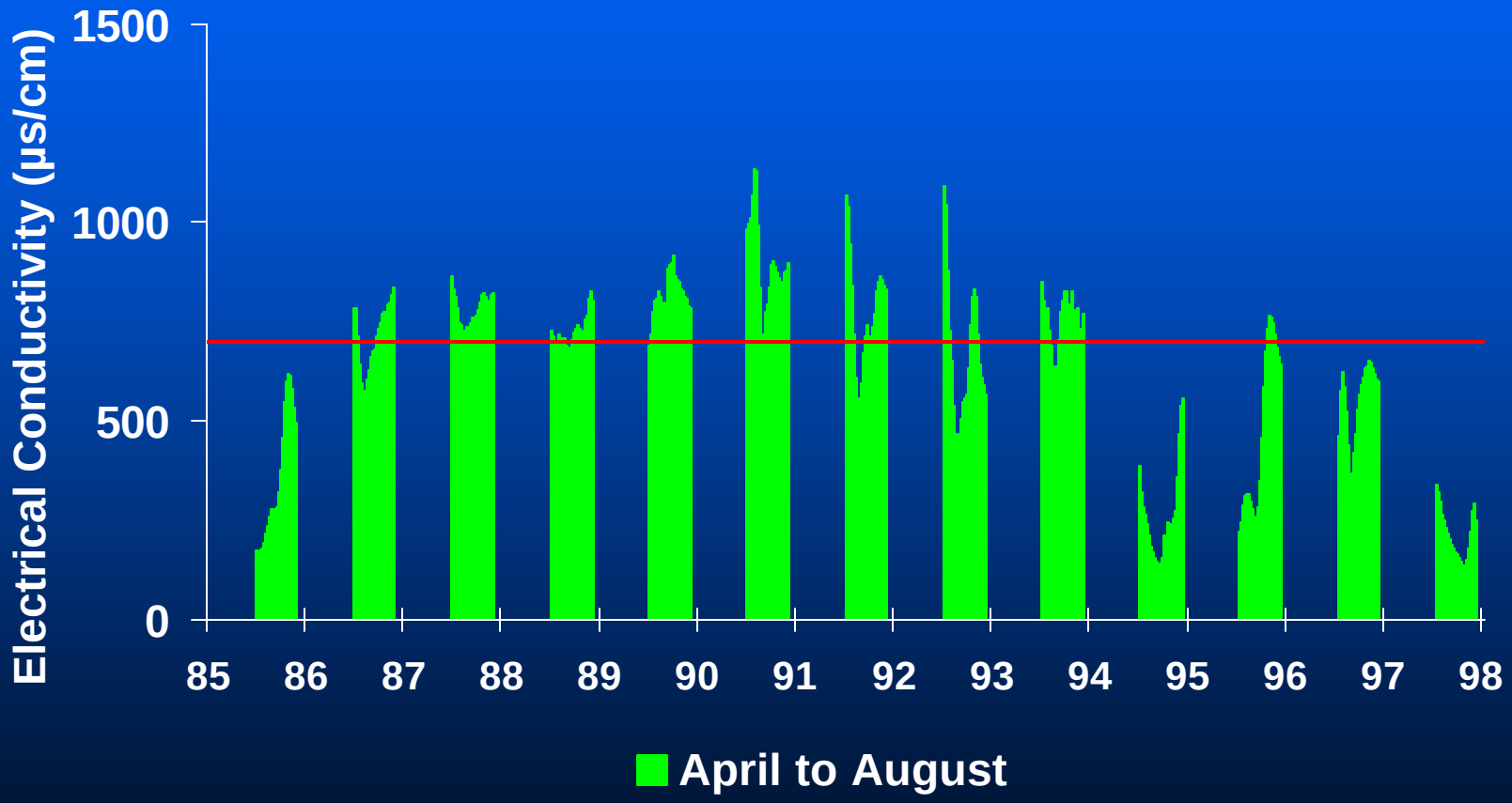
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



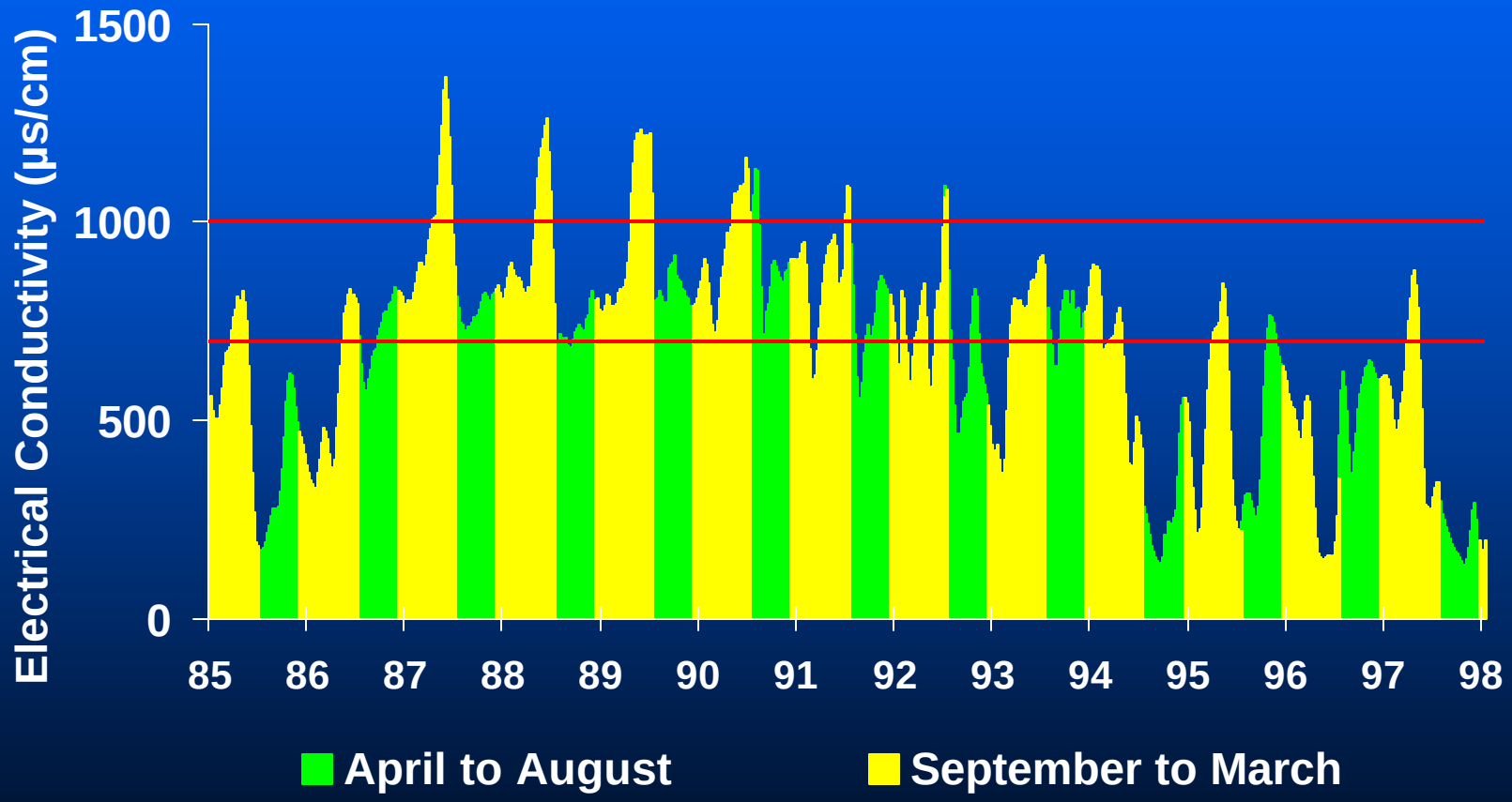
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



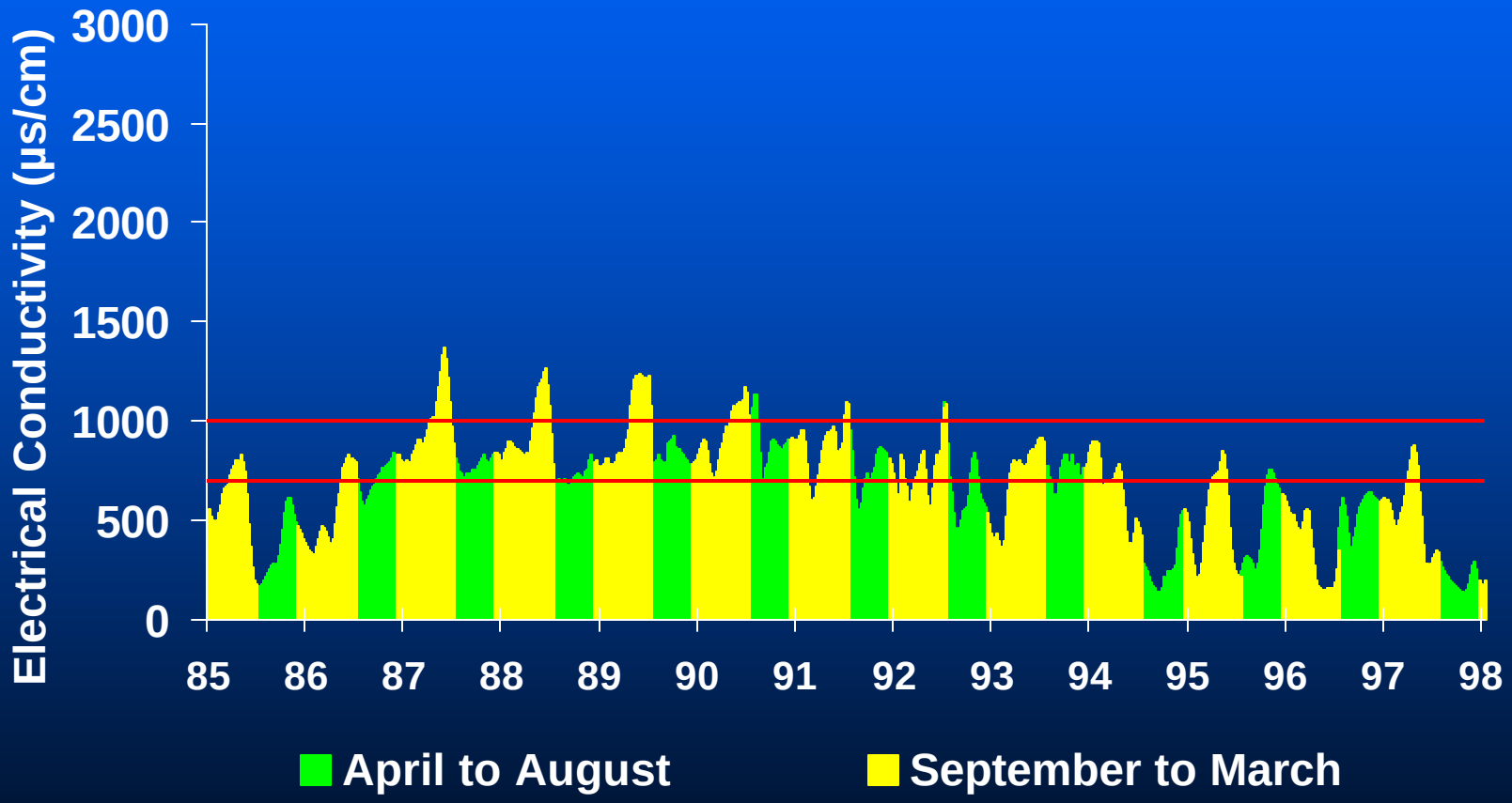
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



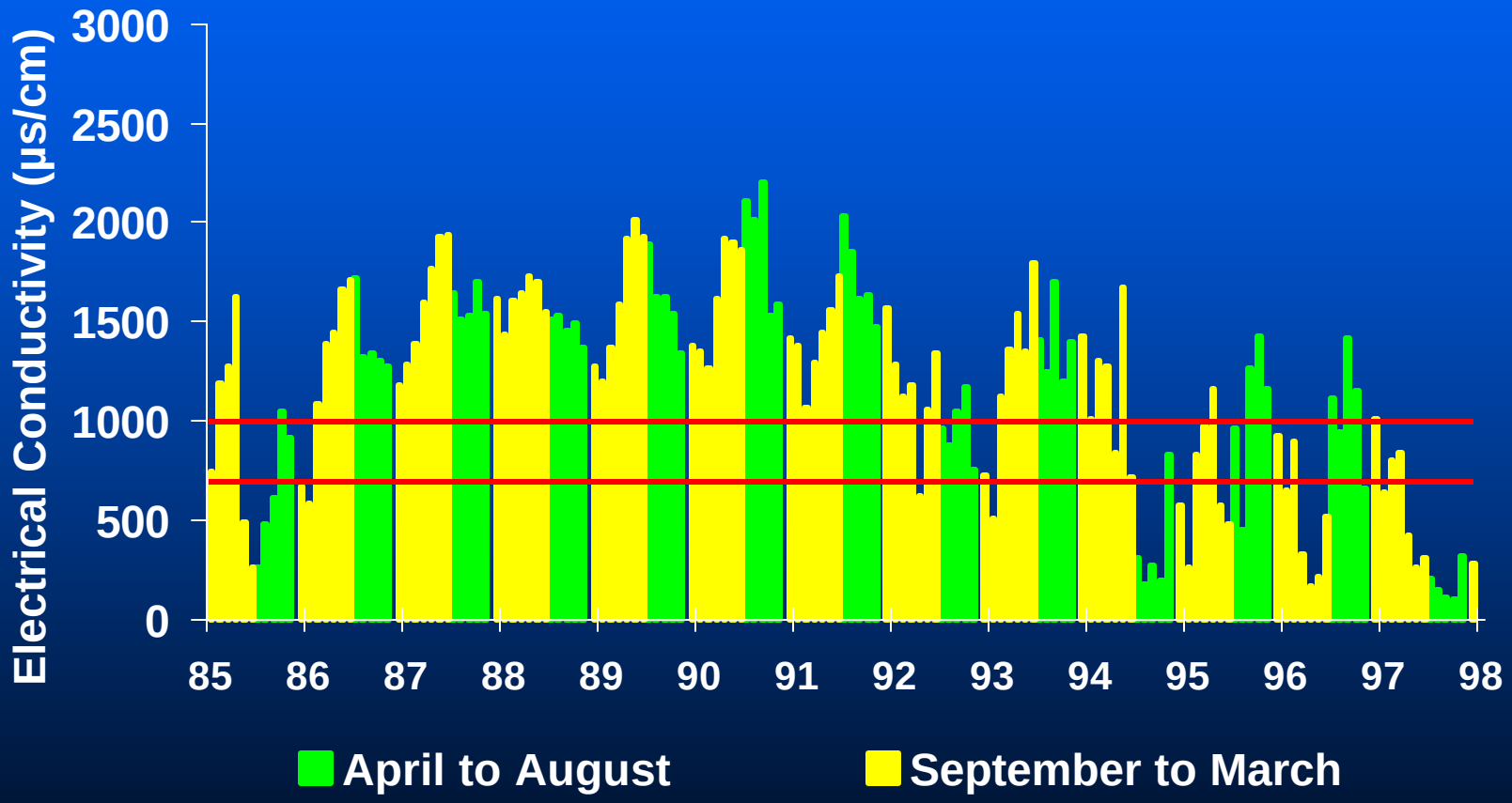
San Joaquin River near Vernalis

30 Day Running Average Electrical Conductivity



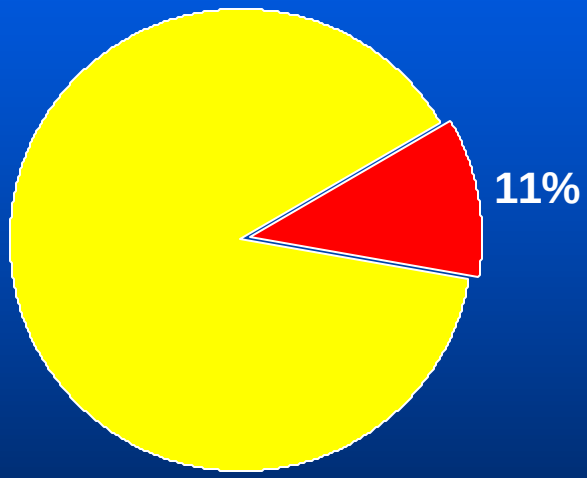
San Joaquin River at Crows Landing

Monthly Average Electrical Conductivity

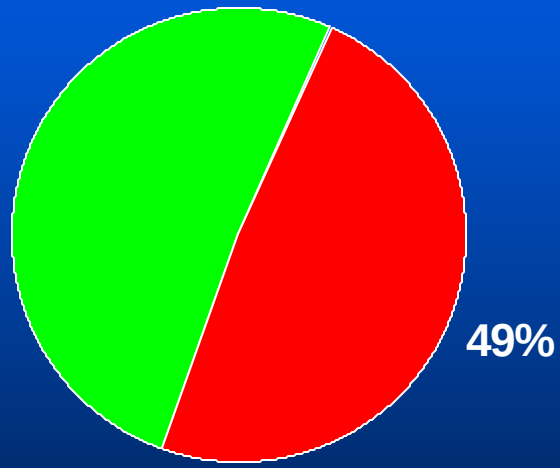


San Joaquin River near Vernalis

Percent of days that 30-day running average electrical conductivity objective has been exceeded from water year 1986 through 1998



September to March

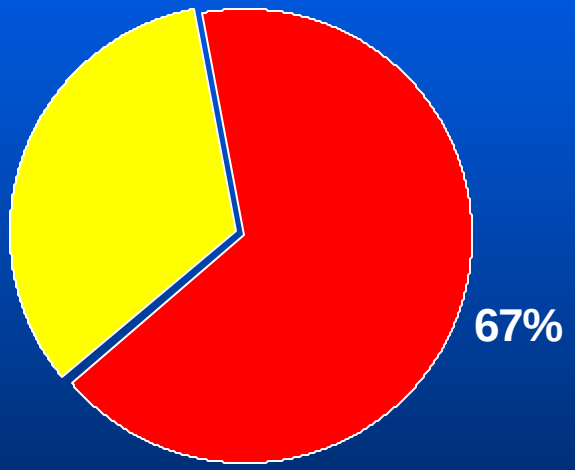


April to August

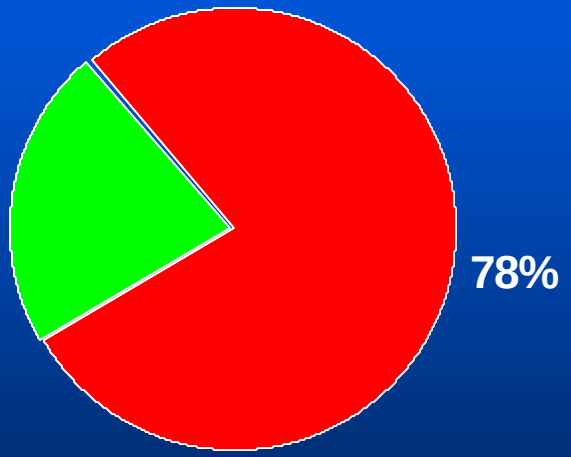
Percent of Days Objective Exceeded

San Joaquin River at Crows Landing

Percent of months that mean monthly electrical conductivity at Crows Landing exceeded Vernalis objectives from water year 1986 through 1998



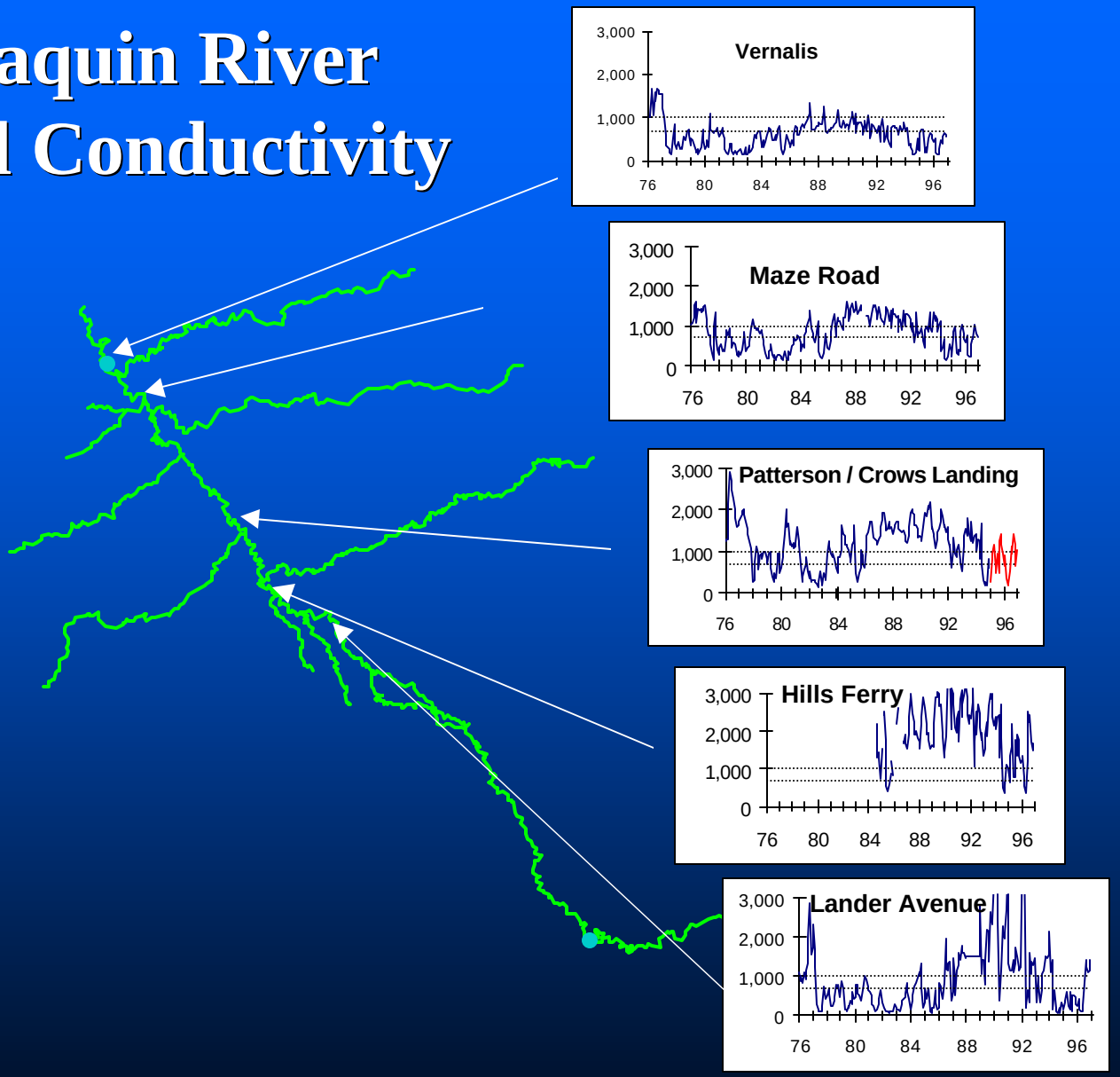
September to March



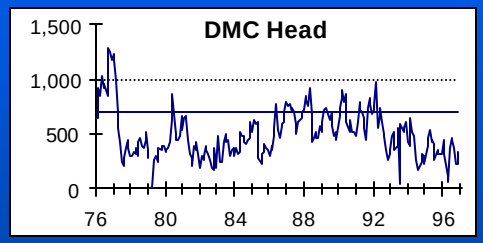
April to August

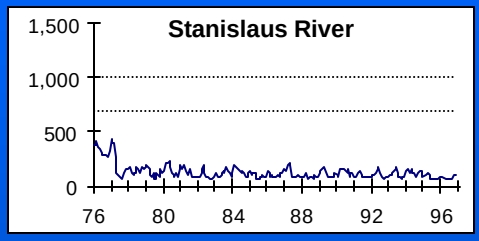
Percent of Months Objective Exceeded

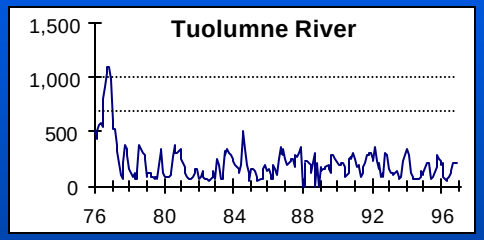
San Joaquin River Electrical Conductivity

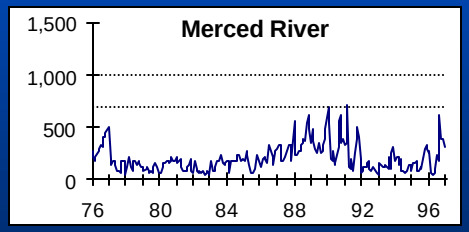


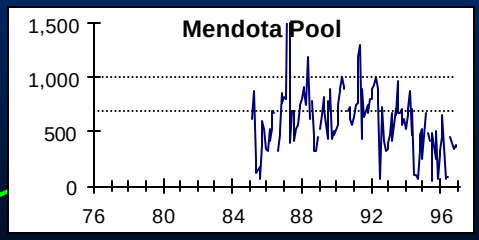
San Joaquin River Supply Water Electrical Conductivity

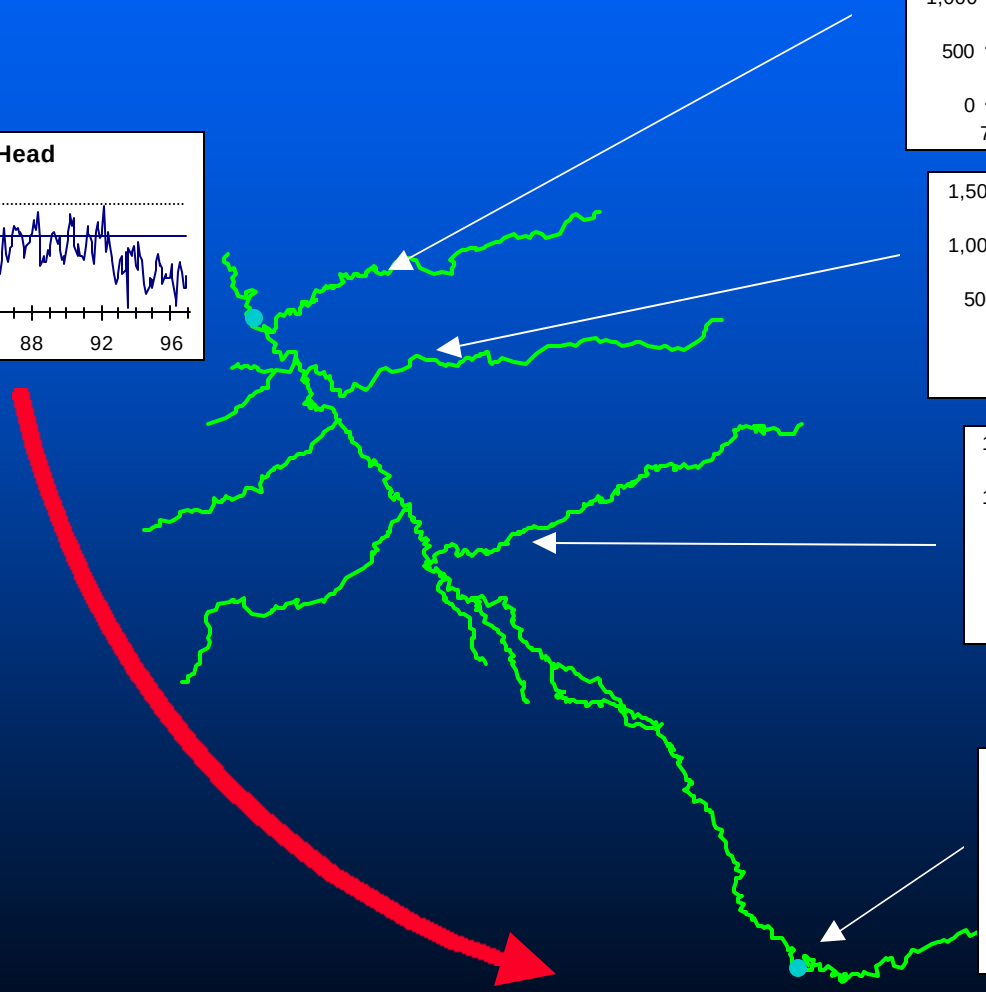






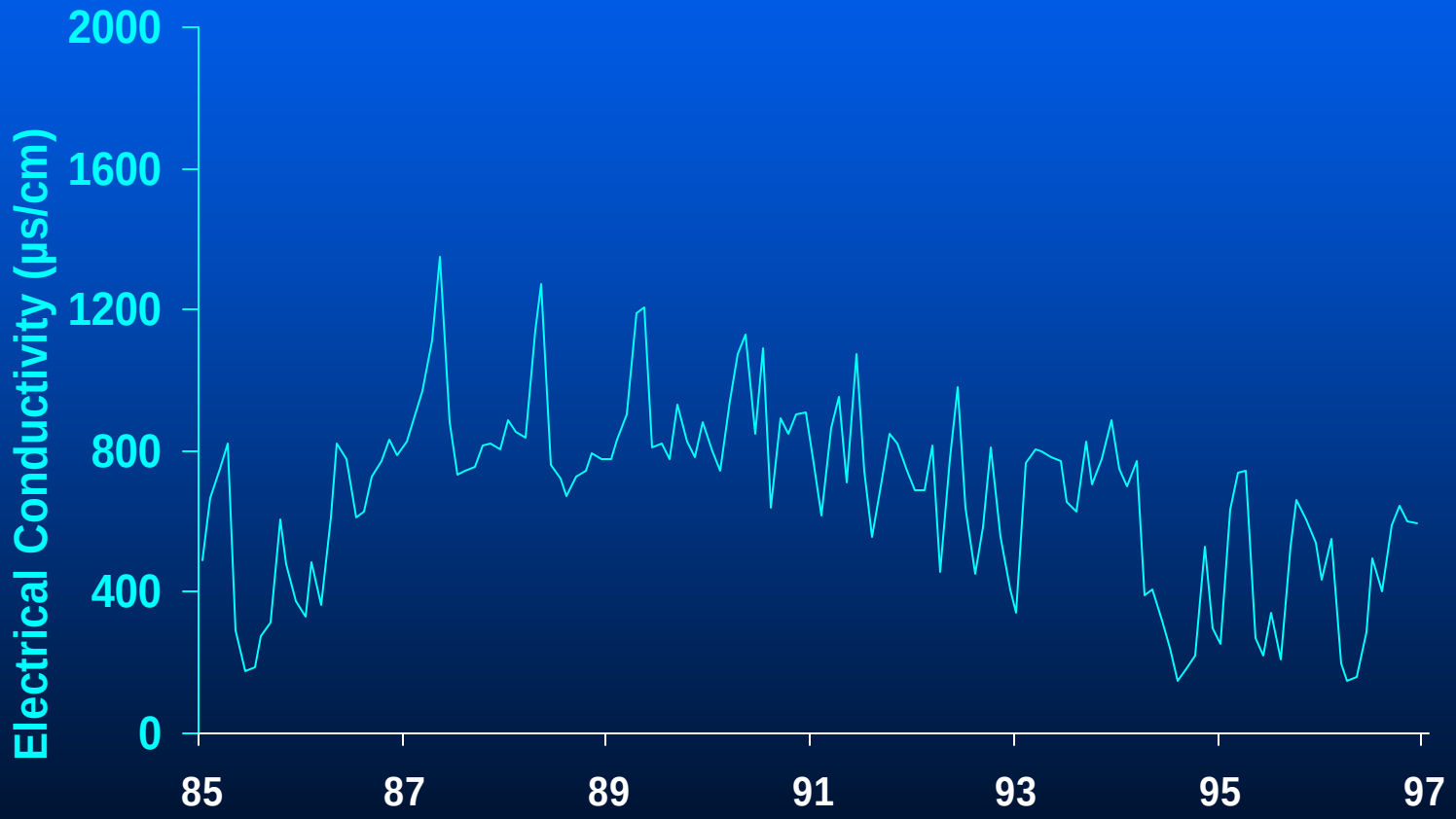






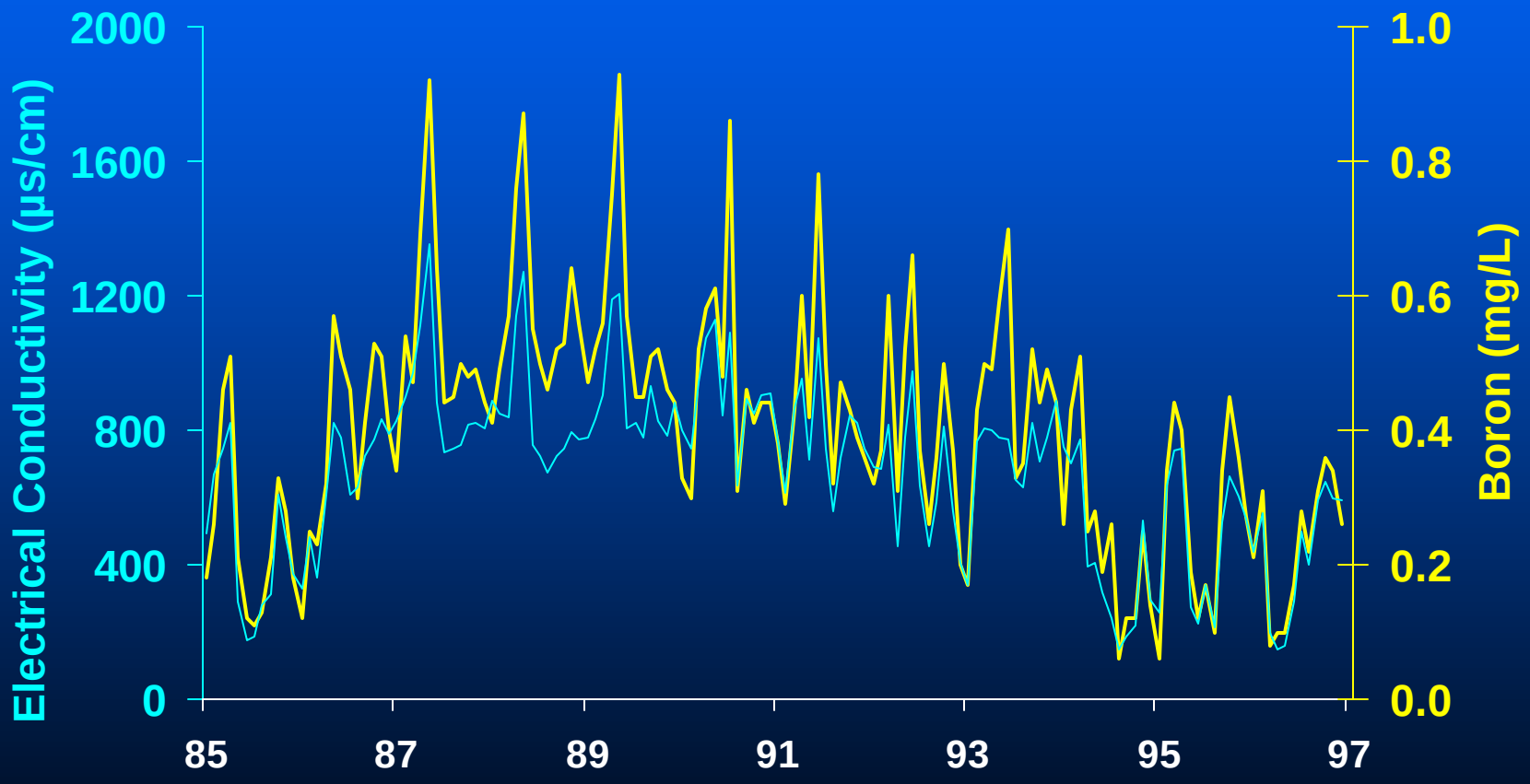
San Joaquin River near Vernalis

Electrical Conductivity and Boron Concentrations



San Joaquin River near Vernalis

Electrical Conductivity and Boron Concentrations

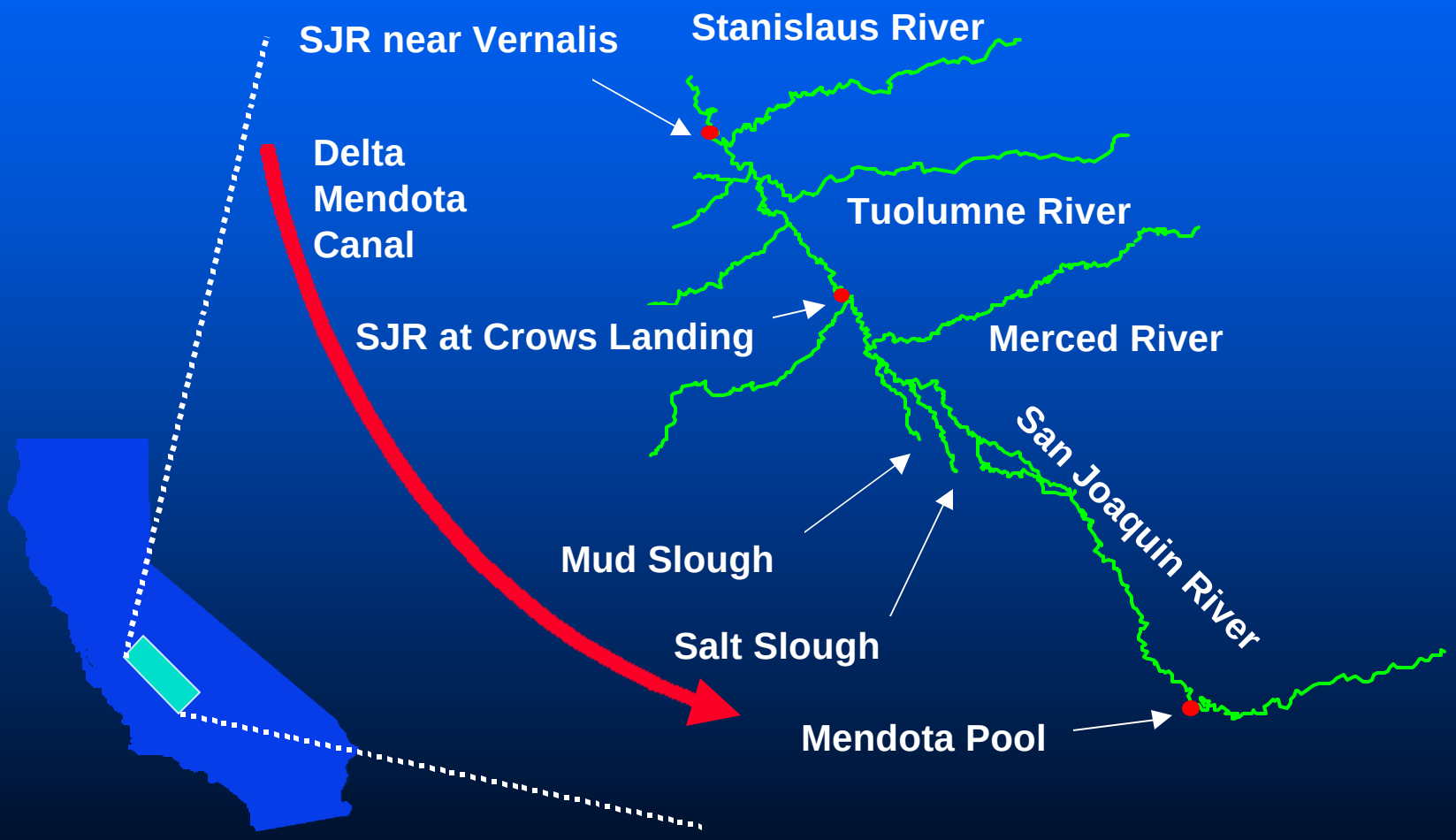


Water Quality is a function of...

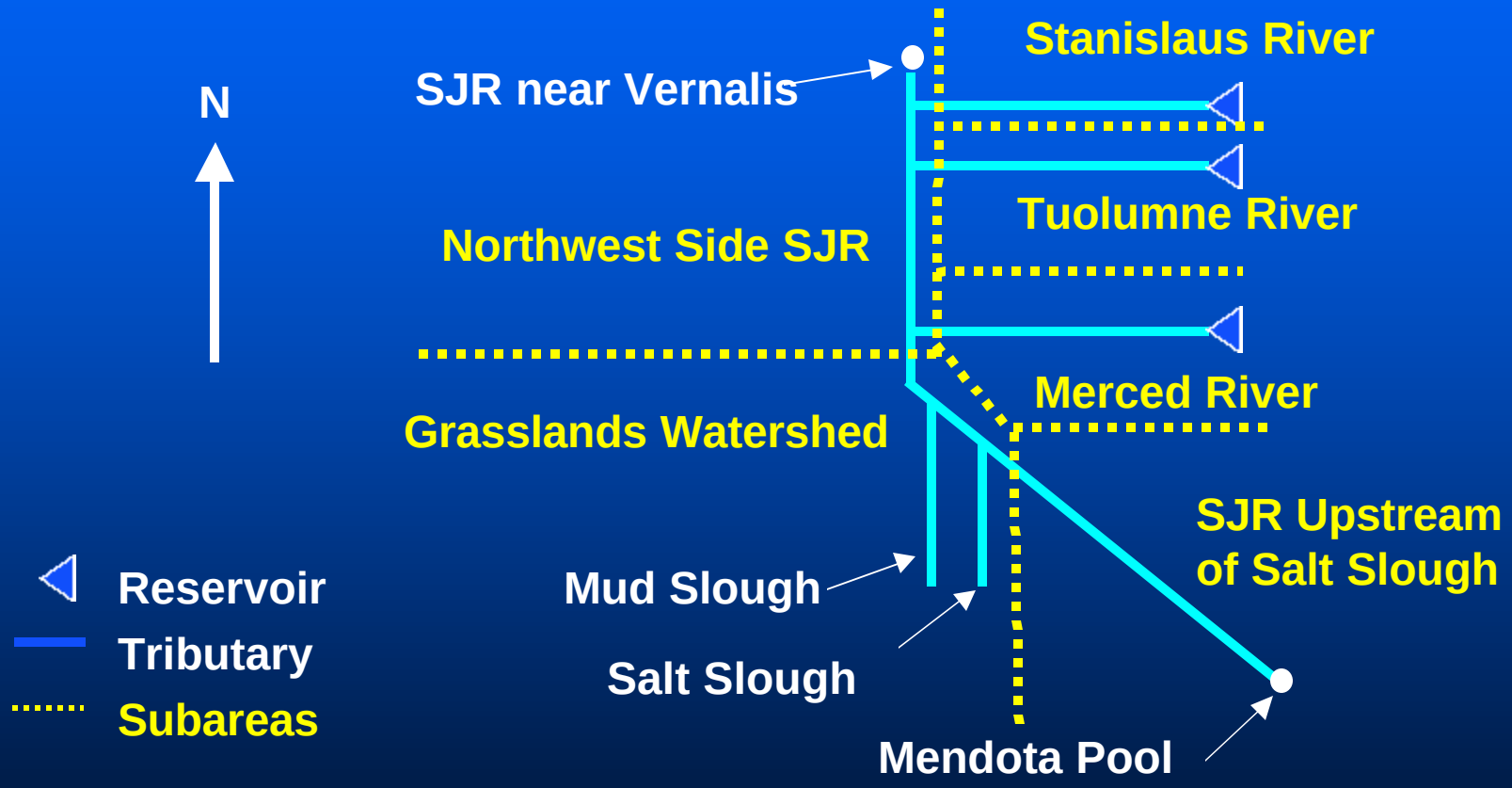
- Dilution flows
- Salt Loads

Where are salt and water coming from?

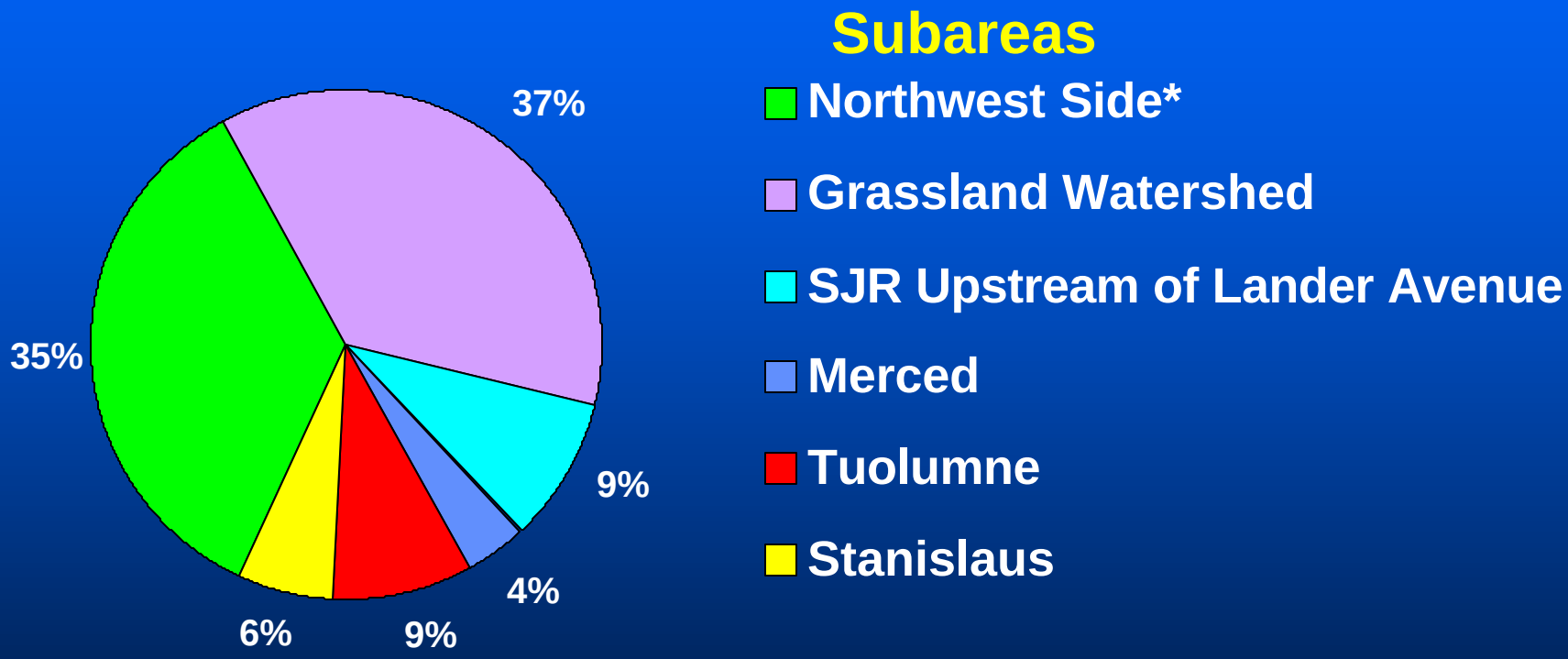
Lower San Joaquin River Basin



Lower San Joaquin River Basin Subareas



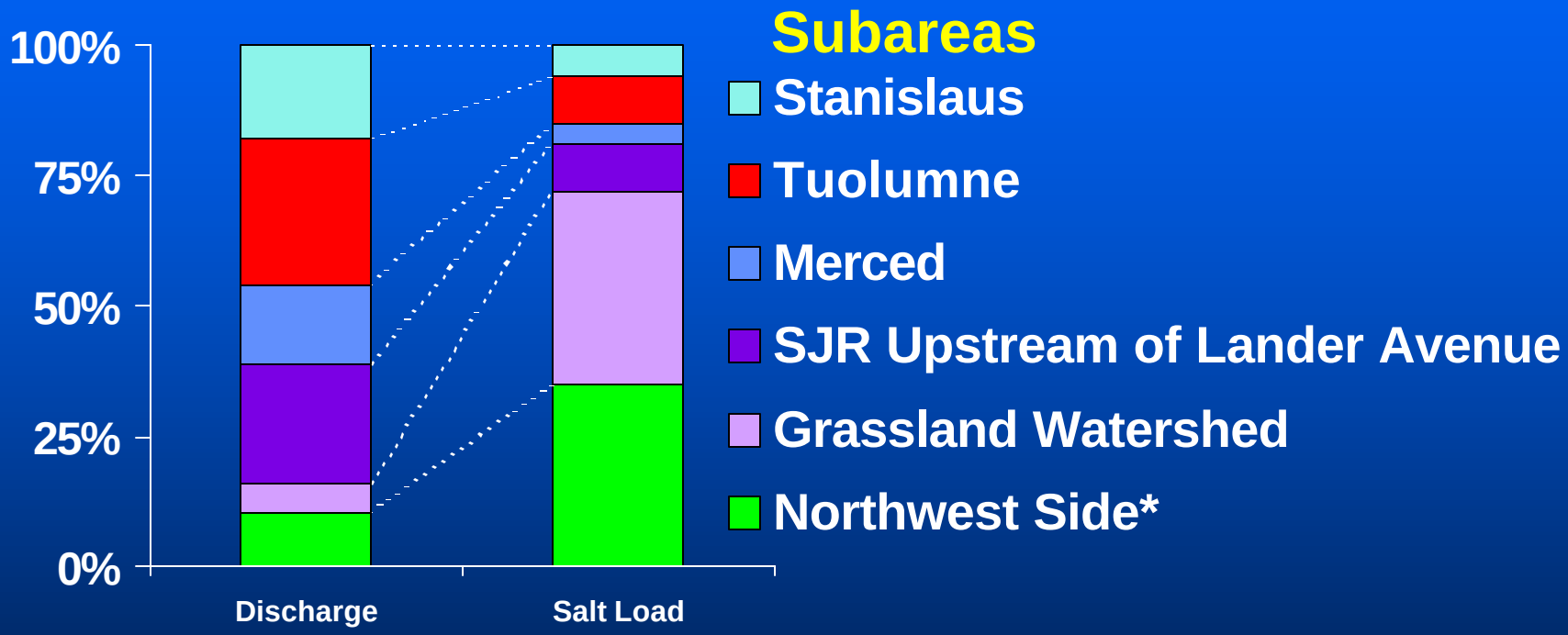
Sources of Salt (Geographic)



Mean Annual Salt Load to SJR for WY 1977 to 1997: 1.1 million tons

*Northwest Side estimated by difference :Vernalis minus sum of other sources

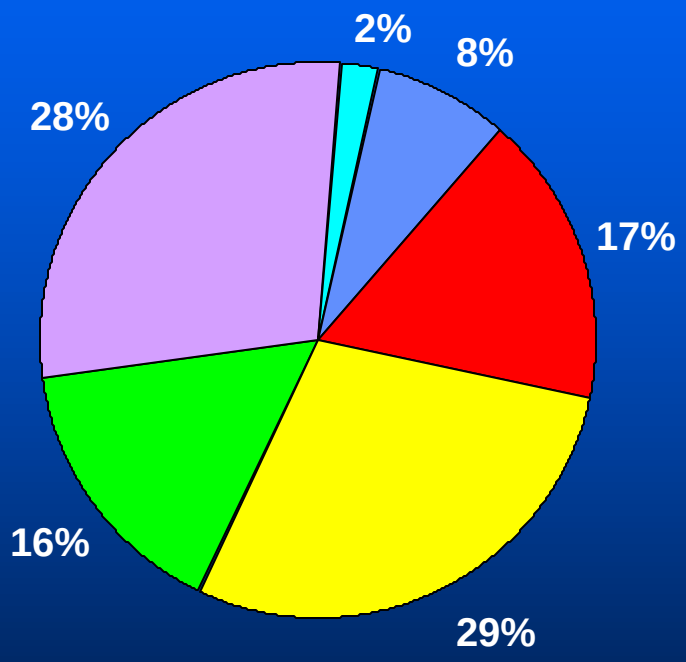
Geographic Sources of Discharge and Salt



WY 1977 to 1997: Mean Discharge: 3.7 million acre-feet,
Mean Annual Salt Load: 1.1 million tons

Basis: Historical data and spreadsheet analyses

Sources of Salt (by type)

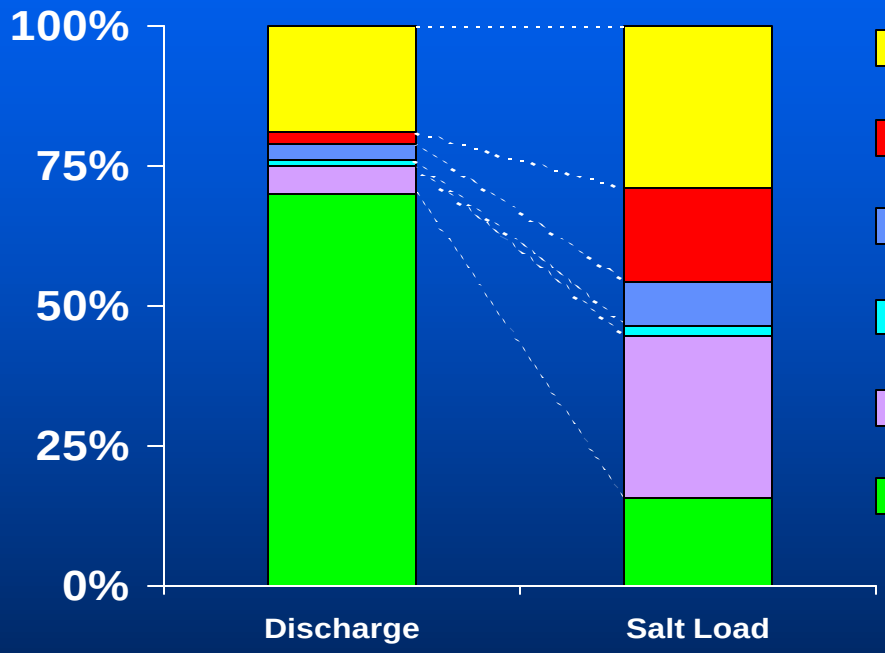


Mean Annual Loading of TDS to SJR for WY 1985 to 1994: 1 million tons

Basis: Historical and SJRIO* model data and spreadsheet analyses

*SJRIO: San Joaquin River Input Output Model

Type Sources of Discharge and Salt



WY 1985 to 1994: Mean Discharge: 1.9 million acre-feet,

Mean Annual Loading of TDS: 1 million tons

Basis: Historical and SJRIO* model data and spreadsheet analyses

*SJRIO: San Joaquin River Input Output Model

Lower San Joaquin River Basin Changing Conditions

- Vernalis Adaptive Management Plan (VAMP)
  - changing SJR flow patterns
- Grassland Bypass Project
  - decreased flow volume, decreased salt load, increased salt concentration
- Changing CVP Allocations
  - fluctuating agricultural water supply (limits on Delta pumping)
  - increased wetland deliveries in last decade (Central Valley Project Improvement Act)
- Increased Agricultural Water Use Efficiency
  - water transfers, decreased return flows
- Increased use of Subsurface Agricultural Drains
  - increased salt load to SJR

Questions

- Is this an accurate representation of current water quality conditions?
- What can you do?
  - keep in touch
    - » help us update our mailing list
  - comment
    - » review draft reports
    - » discuss locally